VOLUME 35, NO.1 • THE GEORGE WASHINGTON UNIVERSITY • EDITION 2, SPRING 1988

MECH ENGR

PUBLISHED BY THE ENGINEERS' COUNCIL IN COOPERATION WITH THE ENGINEER ALUMNI ASSOCIATION

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MECHELECIV

Established 1942

EULER UY

The Popsicle Stick Bridge Contest held on February 10, 1988 was one of the traditional events for the GWU Engineers' Week.

MECHELECIV is a student and alumni magazine published 4 times a year (twice each semester) at the George Washington University by the direction of the Engineers' Council and in cooperation with the Engineer Alumni Association.
MECHELECIV serves the Engineering School community as a responsible student/alumni magazine, independent of the School and University administration in its management and decision making.
MECHELECIV is managed and administered in accordance with the "Policy and Procedures Governing the Cooperative Publication of MECHELECIV by Engineers' Council and Engineer Alumni Association". This document was agreed upon and signed on September 20th, 1984 by the Engineers'Council and the Engineer Alumni Association.
Subscription: $2.00 per year. Circulation: 10,000. ISSN#: 0047-6387. Second class postage paid at Washington, D.C.
Address all communications to: MECHELECIV, Davis-Hodgkins House, 2142 G Street, N.W., Washington, D.C. 20037 or call (202) 676-3998.
POSTMASTER: Please send address changes to: MECHELECIV, Davis-Hodgkins House, School of Engineering and Applied Science, Washington, D.C. 20052.

A Look Back from Inside

by Thomas Kee and Thang Le

IEEE

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

Student Professional Awareness Conference

On March 2, 1988, a dream to help engineers become more informed of the non-technical aspects of engineering didn't quite come true at the George Washington University. It was the day of the S-PAC (Student - Professional Awareness Conference). We, co-chairmen of the registration committee, would like to discuss a few aspects that were vital components of this particular event.

One area of particular deficiency was the lack of attendance. Although this conference was not the first of its kind (one was held at GWU two years ago), it was one of the least attended. The conference's poor attendance might have been attributed to the attitude of the engineering student body as a whole. The poor support for this important event served to indicate that either most of the upperclassmen were aware of the often neglected areas in the engineering profession, such as effective written and verbal communication skills, or that they all have jobs waiting for them after graduation.

Since this event was sponsored by the IEEE (Institute of Electrical and Electronics Engineers), many students were scared away by the belief that it was an "electrical engineers only" conference. The tickets sales committee repeatedly stressed to no avail that this conference was designed for all those interested in furthering themselves as "open eyed" engineers. This message was delivered without implication of any restrictions due to an engineer's field of study.

The main objectives of S-PAC are precise and simple. S-PAC's are designed for the individual interested in investigating non-technical issues which affect their careers; human relations, ethics, interviewing and communications skills are just some of the discussion topics. It is especially important that the individual be self-confident in order to perform effectively on the job. S-PAC's allow the individual to reexamine goals, needs, and skills which result in the creation of a relatively more confident and successful individual.

The importance of the S-PAC is apparently implied by the engineering curriculum at the George Washington University. The curriculum requires degree students to accumulate a total of at least eighteen (18) credit hours in humanities and social science courses. This requirement is part of the criteria for obtaining an accredited engineering degree. The purpose of this requirement is to expose the student to a broader education — to "round out" his outlook upon the world in which he is a part of.

When S-PAC's were held at other universities around the country, the respective schools' faculties thought of them as such important events that they cancelled classes so that their students would be able to attend. The School of Engineering and Applied Science denied a request that classes be cancelled when this issue was addressed by the S-PAC representative, Hans Cherney. The faculty in general was also not very supportive even though information concerning the event had been delivered to all faculty members prior to its passing.

The unsuccessful transmission of information probably was caused by the unreliable communications channel between student and faculty. This message of urgency was not received and so most GWU engineering students happily go on operating in the mode of mass ignorance. We believe that if there were to be another S-PAC at GWU, it would have to be achieved through the cooperation and support of the entire engineering school and not through the hard work and dedication of a small group of students with only a dream.

LARRY DWON: "THE ART OF BECOMING EMPLOYED"

Transcribed by Lilimar Z. Avelino

I went through the whole gamut of positions that engineers are exposed to, and I want to say that the last twenty years of this career was in a function that I created. There was no other function like it in the whole power industry. The title was Manager, Engineering Manpower for the American Electric Power Service Corporation.

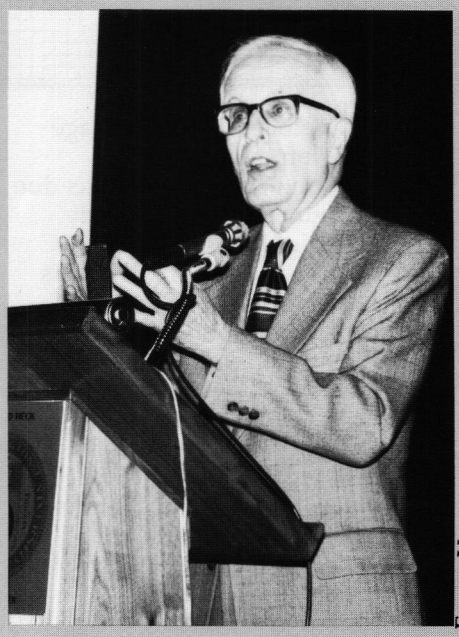
In that position, I also created a four-step ladder, whereby technicians, technologists, engineers and managers had a path to move up whatever ladder you wanted as long as you meet certain qualifications. Well, they just started the idea of doing ladders about a year ago. The purpose for this was to utilize engineers and technicians properly or to utilize the human resources of a technically-educated type properly in industry.

engineers and technicians who came into this system. This was the first time to my knowledge that a position of this scope was developed in any company. About a year ago, the personnel departments have decided to be called the Human Resources Department or Human Resource Department. That is exactly the same position that I created back in 1957. So, they are catching on about forty years too late. What I am trying to point out to you is that if a company sends out to you, as a recruiter, a non-engineer, that company is telling you something - it does not respect engineers. Keep that in mind when you are interviewing.

Larry Dwon received a professional Electrical Engineering degree from Cornell University in 1935 and an MBA degree from New York University Graduate School of Business Administration in 1954. He is a Registered Professional Engineer in New York (1941) and North Carolina (1983). He is a Life-Fellow member of IEEE and Eminent Member of Eta Kappa Nu, of which he was President in 1958-59.

Mr. Dwon's experience includes teaching in evening engineering schools and industry and giving seminars of his own creation. His last twenty years in industry were spent as Manager, Engineering Manpower, in which position he became involved with manpower utilization studies, recruiting, college relations, and the training and development of engineers, technicians, and managers.

Mr. Dwon has received many citations and honors, including USAB's highest honor for Engineering Professionalism. In 1984, he received the IEEE Centennial Medal for outstanding service to the profession of electrical engineering.



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How Did I get that Job: Manager, Engineering Manpower?

Back in 1957, there was the Grinter Reports. Engineering education was screwed up, and electric power engineering was thrown out of the curriculum by most schools. As a consequence, the president of the American Electric Power company tried to write papers and made speeches about it. He finally gave up and took the executive vice-president, vice-president of engineering, and myself up to MIT. We were going to convince Dean Gordon Brown that if MIT would go back to power, all the other schools would follow. The president was disappointed. They practically told him to jump into the Charles River. So, he came back to New York, dismissed the two executives, and turned to me, and said, "Larry, you have got to do something." That's when I made my first mistake. I said, "What do you want me to do?" He jumped up and down and I knew I had to let him talk for twenty minutes. Then, I apologized to him and said, "I'm sorry. That was a stupid question. I will have an engineering specification on Monday morning to tell you what I'm going to do." He said, "Fine. No hard feelings." So, he went to his office, and I was dismissed.

Monday morning, I came in with the engineering specifications, knowing full well that he did not like position descriptions. In big letters, I put "Engineering Specifications: Manager Engineering Manpower." He signed it, and with that one stroke, I took everything that concerned engineers, technicians, and technologists under the personnel department, and I put it over into the engineering department. From that point on, only engineers interviewed students in engineering. That's the way it should be.

Writing your Resume

When you are interviewing, you are going to meet all kind of types. If a company sends anybody but an engineer out to interview you, they are making an impression on you. You should put some worth in that impression. Now, most students postpone the transition from school to industry until the last year - the rat race year. All of a sudden it is too late to get a job.

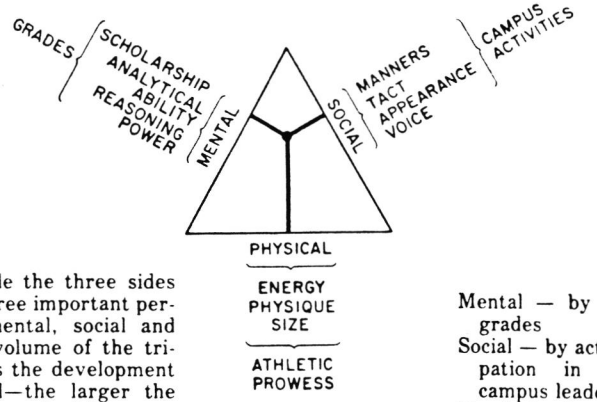
First of all, somewhere along the line as early as possible, you have to set some goals. As a freshman, somebody may say, "How do you expect me to set goals when I don't even know what I want to be?" The correct answer is, "I want to be a sophomore with high grades." The sophomore should tell me, "I want to continue my high grades, but I want to add some extracurricular activities." The junior should say, "I want to continue my high grades. I want to continue my extracurricular activities. I also want to have some worthwhile job experience." When you become a senior, you have to fill out a college placement form or a resume. I found many seniors who didn't know what to put there, because they didn't do anything. So what you have to do is set up these goals and know what it is that you are aiming at.

Now, let me give you a lecture class. You have a small triangle, and you are a senior. You are trying to write a resume about that little triangle. Each side corresponds to an attribute that you have got. Four years later, you should have a big triangle. Otherwise, you resume would not be any better than it was when you were a high school senior. You know you weren't worth even minimum wage then.

Somehow, the educators here at GW, in four short years, made a miracle out of you. You are now worth $28,000.00. That is a miracle. A lot of companies are going to pay you that, but some better company is going to ask you, "What's that big triangle like? What did you accomplish here?"

Let me show you what the triangle is. The side on the left is the mental abilities that you have got. Each of us are born physically strong, and physical attributes can be improved in college also (second side). The other side is social. Social means anything where you get people involved. So, IEEE is one way. Eta Kappa Nu is another. You have to get involved. If you just study all night or play around, then you don't get involved in the proper way. You are a point in that triangle, and the measure of those attributes is the perpendicular to the side. If you remember your geometry, for

PERSONAL-ASSETS TRIANGLE
APPLIED TO A COLLEGE STUDENT



In this triangle the three sides represent the three important personal assets—mental, social and physical. The volume of the triangle represents the development of an individual—the larger the volume the larger each of the assets would become as a result of experience and continuing education.

Mental — by scholarship or grades
Social — by activities, participation in organizations, campus leadership, etc.
Physical — by athletic activity and prowess, etc.

any point in that equilateral triangle, the sum of the perpendiculars to the side are equal. So, we are all born with an equal number of attributes, but they are distributed differently. So, that is what's used by your recruiter. He looks at you. You have all the opportunities out there. You just have to find them.

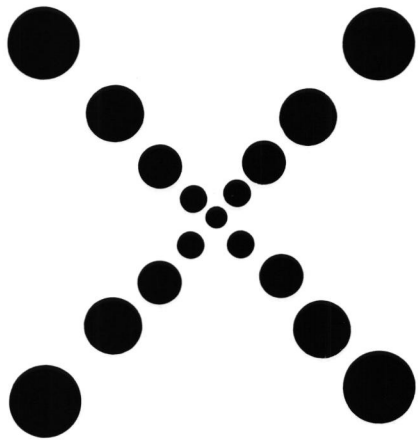
The World Out There

I want to express very importantly to you that the engineering environment out there in which you are going to work is a lot more different than it is here at school.. There are problems out there and if you don't become aware of them, you might get a cultural shock. Every company utilizes engineers as technicians - some more than others. There is a reason for this. There is a labor act that says, "Engineers can be classified as exempt people. Technicians have to be classified as non-exempt." The law goes on to say that non-exempt people have to be paid overtime, probably because you are thrilled with what you are doing, but you're not going to be paid for it. That saves the buck for the companies. There are some companies that give you overtime and some that give you double time, but very few. So, that is something you've got to be looking for.

Engineering environment needs improvement. I have been proposing to IEEE that what we really need is for them to act as a leverage arm to educate employers and to appraise them as to their professional practices. Publish it. Employers will love them, because it will attract the good people. For others, many of them would improve as a consequence.

There is hardly any such thing as lifetime careers with adequate rewards anymore. The only industry that it exists in is the utility business. Eventually, in the 1990s, that industry is going to beg for people again. So, it is like the stock market. Some of you may want to go into the industry and do what you can to ensure yourself for ten to fifteen years. Then, you will be in a firing line for possibly good positions. Here are some statistics that I have been following of an Eta Kappa Nu award. I noticed that General Electric and Westinghouse had the most outstanding young engineers up to 1970. What happened since then? Well, the environment has regressed.

You are the elite people. That



is why you get paid $28,000.00 right from the start without any experience. These are the reasons why you are unique. So, when you go into an interview, you go in there with confidence. The formula for employment is this. You must first recognize that there are always persons out there who are replaceable; therefore, the place to write is not the personnel department, or "To Whom It May Concern". You write to the chief engineer. Here's your marketing technique. You have got to write some letters. So, please learn how to write before you become seniors. For resumes, put down the factual information that will sell you as a unique person.

Interviewing

Then, you have your interviews. Remember that the correspondence and the resumes preceded the interview. If your correspondence and resume are bad, then you have already destroyed your image. So, always sell from strength. The game I am playing here, and the game you are going to be playing in interviewing is a baseball game. You are at home plate and you try to get to the campus interview. The thing that precedes that is your documents. They better be neat. They better be accurate. They better say something, and they better have NO typographical errors. If it goes through a personnel-type and there is a typographical error, the paper gets thrown into a trash basket.

So, your campus interview is dependent on your writing ability. You get your plant interview on the basis of what happened on the campus interview. That is mostly the impression you made as a person. Did you speak well? Did you ask questions?

The third base is the offer you get. Everything that preceded that is what depends upon whether the company is going to make an offer. You may be interviewed by people you don't want. You have to be at your good behavior at all times. Above all, if they give you instructions, follow them or at least answer their letter whether you can or cannot do it. Please be ethical in this money-making scheme of plant interviews. So, all of this will determine if you get a job offer.

Of course, the last step is to get to home base. That is entirely your decision. You better have wanted that job or you have the guts to say no. Don't take a job that you think is not suited for you. You should stay at that job for at least one year. Otherwise, you will have a job-jumping resume, and it won't look good for you. You have to give at least one year ethical service. So, it is your decision.

What does the interview comprise of? It consists of two people: and interviewer and an interviewee. That is the essence of the whole game. You are on one-to-one basis. What is the interviewer? Unfortunately, that interviewer is the company. Now, he may be a jerk, but you still have to respect him. The company is him, and he is making an impression on you. His judgement is certainly respected back at the office, and his appraisal is important. He may not have anything to do with hiring you, but what he puts down on his appraisal counts. So, ideally, you hope he did his homework as he hopes you did.

The interviewee is you. So, you are making an impression. His answers are respected. You reveal yourself by his resume, by the questions and answers that are given in the interview, by the personality, by whether you slouch in the chair, and whether you are a wise guy. As for correspondence, do your homework. Try to determine which area you want to work in, and what kind of industry you want to work in. Read the company literature. Go to the library and various indexes. Read their annual reports. They may be on the verge of bankruptcy. You may even impress the interviewer with your homework.

What should an interview be? It is simply a two-way conversation between the interviewer and the interviewee. Each one is seeking information. It is a conversation. What you try to do is evaluate each other, and you have got to make a decision. During the interview, the student should listen to what the guy has to say. Even though he is a jerk, listen to him so you can at least ask questions that he hasn't covered. Remember it is a two-way conversation. Relax, enjoy it, and tell it straight. This is not an act, because if you are acting, he may hire you for the wrong reason. Then, we are both the losers.

Answer questions that are asked and don't answer question that aren't asked. Don't give the interviewer the benefit of the doubt. Don't make his job easy. Just answer what he asks you. Don't offer any other information unless he asks you. Then, you ask questions. Have the questions prepared in advance. Always end on a friendly note, no matter what you think about the interviewer, because next week he may quit the company and move on to another company. Next thing you know, he is interviewing you again. If you become friendly, then you may have a better chance.

What do the interviewers look for? They want to know what makes you tick. What have you got to offer? What do you want to excel in? You should expect courtesy, and fair treatment. You should get straight answers. You should get the opportunity to speak half the time. You ought to get an objective appraisal, and you have to get feedback. Anyone who tells you that you will get an answer within two weeks, and you don't get it, that is a reflection of that company. You don't want to work for that outfit.

My summary is: Please learn how to speak. Please learn how to write. Do your homework. Be sure that you want to work. Know what you want to do, and sell from straight. You are unique people. Thank you.

CHARLES ALEXANDER: "SHOULD YOU TRY FOR AN ADVANCED DEGREE?"

transcribed by:

Swati R. Patel and

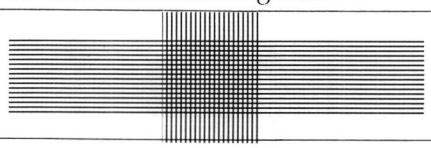
Claire G. Silvestre

"Each degree in engineering represents certain skills the student acquires. Simply, education at the bachelors' level attempts to impart an understanding of the 'language of engineering' and an ability to 'think'; at the masters' level, the student should acquire an ability to do advanced engineering and to communicate that work effectively both orally and in writing; the PhD should represent a thorough understanding of the fundamentals of engineering, and a mastery of the skills necessary both for working at the frontiers of almost any engineering area and for communicating one's efforts to others."

There is a great concentration on knowledge, however, in engineering that knowledge is not emphasized as much as skills. The three occupational areas: engineering, medicine, and law all have a great emphasis on knowledge and skills. However, engineers have to go out and solve a problem that has never been solved before; while, in medicine and law the problems have already been solved before (with the exception of new incurable diseases, such as AIDS).

Engineering is a positive profession in which its answers to problems are not found in books; positive profession in that new technologies are always being introduced. Meanwhile, medicine and law are negative professions in which their answers to problems are found in books; negative professions in that diseases, sicknesses, divorces, civil suits, and criminal cases are always encountered....all of which have a negative connotation to it.

So, concentration of skills in engineering is very important and is highly emphasized over knowledge. The recent graduate does not have to go into industry to obtain these engineering skills, but may instead go into graduate school and acquire them by working toward advanced degrees.



The following questions are generally asked by many students:

Q — Should a student earn an MS and/or a PhD?
A — The answer is definitely YES to both of these degrees. Many students, as seniors, fear graduation because they "really haven't learned anything." They do not realize that industry knows this and will guide the recent graduate into an environment where engineering skills can be developed. The development can take place at the master's level where the student will do some specialization in a given area, and will learn to do advanced engineering in that area.

Another advantage of earning an MS degree in a particular field of engineering, such as an MSEE, is that the student will get a more clear focus on a specific area. Many graduate courses are developed over basically the same concepts that an undergraduate may have studied. The student now has more time to probe more deeply into these topics, since in many cases, they are being studied for a second time. In general, fewer more interrelated courses are taken.

During this MS program, the student must also develop communication skills, for success as an engineer will be directly proportional to the engineer's ability to communicate both in written and oral forms. So, writing a master's thesis is a must. One of the major skills acquired in the master's degree program is the ability to write an advanced engineering report which should be a comprehensive and easy to understand paper. The student is normally required to orally defend that thesis in front of a group of faculty members. So, in summary, the skills the student should acquire while in the MS program are an ability to work at an advanced engineering level and an increased ability to communicate.

The PhD degree is a very broad-based degree. The PhD candidate should develop the ability to "finally understand those basic courses taken as an undergraduate." The most important skill the PhD candidate acquires is the ability to go to the state-of-the-art in almost any engineering field. Once at the state-of-the-art, then the techniques necessary to make an original contribution must be

acquired. Finally, communication skills must be significantly improved.

Knowing what both degree programs have to offer, the only definite way to be sure whether an MS or PhD degree should be earned is to go out and interview people in industry. When interviewing, you should look at what people are working on, what level of education they have acquired, and what degrees they have earned. Most engineers will have earned an MS or a PhD.

Q — Who should get an MS?
A — Anyone who can, must obtain an MS. The only qualification which is important is the word "can". An individual who has the desire and the ability to earn the degree should obtain it.

Q — Who should get a PhD?
A — The PhD degree requires a great deal of effort and concentration. A decision has to be made by the student as to whether or not to remain a student for the two to four additional years required for the program. A student who wants to do research, to start a business, to work at the frontiers of engineering, and/or to teach, "must" have a PhD.

Q — When should a student go to graduate school?
A — The decision of when to go to graduate school is a question of maturity and finances. A student who is academically mature enough to handle a graduate program should go — the sooner the better. Many students make a serious mistake when they decide to put off going to graduate school. Why? It is serious mainly because a student is less likely to come back and earn a graduate degree after leaving the campus, and the additional experience normally does not significantly help future employment.

Q — Is it better to obtain industrial experience before continuing the education process?
A — Many students have the impression that five or ten years additional experience at the BS level followed by a master's degree or a PhD degree is preferable. Unfortunately, this is generally not true. But what about the experience — isn't that worth something? If the experience was meaningful and at the right level, the answer would be yes. Unfortunately, with a BS degree, the ten years experience that could be acquired will be at a different level. So a person who works ten years in industry, and comes back and earns a PhD, would be approximately ten years behind a similar student who earned the PhD right away. Ten years behind in terms of salary, in terms of what will have been accomplished, and in terms of rank and tenure from those who enter the academic field. Another serious problem is part-time education. If there is no other way to earn a graduate degree, attending school part-time while working for a company is worthwhile, but it may be the poorest way to attain one's academic goals. The best way is to become a full-time student. An assistantship, for those eligible, is helpful, but the major effort should be devoted to education. The sacrifices that the student makes initially will be offset significantly by the job satisfaction that will accrue to the student who has earned advanced degrees as quickly as possible.

Q — Should I get an MBA first?
A — A student considering either an MS in engineering or an MBA should choose the MS. Most engineers who enter management want to manage in an area related to engineering, and are much better off with the skills that are acquired in the MS program for engineers, especially when it comes to

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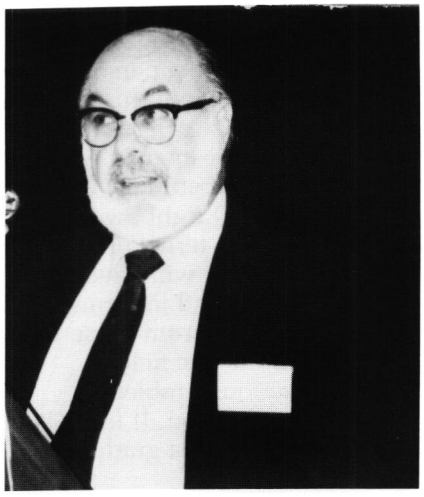
Charles K. Alexander, Jr. is currently professor and chairman of the department of Electrical Engineering at Temple University. He held the same position at Tennessee Technological University from 1980 to 1986. He has also had other teaching experiences at Youngstown State University and Ohio University. He received his PhD (1971) and MSEE (1967) from Ohio University, and BSEE (1965) from Ohio Northern University.

Dr. Alexander has been a consultant to 16 companies and governmental organizations and has received over $1 million in research and development funds for projects ranging from solar energy to software engineering. Aside from being an active memeber of IEEE, he has 35 publications and has made over 150 papers, and professional and technical presentations.

Hans Cherney Speaks on Ethics and What it Means to be an Engineer.

Hans Cherney was born in Germany, and came to USA before World War II. He has a son and a daughter, who are both lawyers. He told me the advice he gave his daughter when she was out looking for a job. "You don't have to think you're smarter, you don't have to think you're better. You only have to know you're different. That uniqueness makes you a valuable asset to any company. No one can give exactly what you can give."

Hans Cherney began his career of working towards engineering professionalism in the National Academy of Engineers. There, he fought against unemployment of engineers. Then he was asked to join IEEE, where he became Vice Chairman, and then Chairman of IEEE Manpower Committee. In this position he worked on a project which was a joint effort by IEEE and the



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Labor Department. In this program, unemployed engineers manned phones, calling all around the country, looking for openings for engineers. They also sponsored resume writing workshops. The program was very successful.

Later he became Vice President of the U.S. Activities Board(USAB), and was very involved in professional issues. He became concerned with educating engineers in ethics, and their rights as professionals. Some companies allowed conferences to be held to educate engineers on professional ethics. But it is often too late once an engineer gets into the work force because companies are not too willing to sponsor the conferences.

So, Larry Dwon and Hans Cherney started Ethics Orientations at universities. In 1977, a survey was made of deans at universities and 95% said yes, IEEE should teach professional awareness. The first SPAC was held at Youngston University, with a couple hours lecture on four Thursdays. Professor Charles Alexander spoke. From there SPAC grew to what it is today.

Engineers are different from other people. You found that out when you were young and you played around with clocks, or took apart your TV. We know we understand things that others don't understand. This makes us all that more responsible to society.

There are three things that I think you should take home with you from SPAC.

One is to learn how to speak and to write. This is very important. Learn how to speak to a certain audience. People must be able to understand your ideas. When you know how to communicate, you are that much more useful when you are employed.

The next is to change your career if you are unhappy. Try to advance, don't just sit there for 25 years in the same job until your product goes off the market and you don't have a job. It is up to you to update your skills and knowledge as you go through life. Loyalty to a company is a falsehood. Loyalty is something you feel on your own. You don't get paid for it. You do a fair days work for a fair days pay. Loyalty should go two ways. But loyalty to a company really doesn't get you anywhere. If the company doesn't have the money to go on operating, or if it merges with another, or loses its contract, you may be out of a job.

An engineer is often unfortunately identified with his company. Your identity is not your company. Your identity is engineering, electrical, mechanical, civil, etc. The doctor is not identified with a certain hospital, they just define what they are, surgeons or internists, etc. We must develop this attitude if we want to be professional.

A third piece of advice is that when you go out and start working, try to keep an environment that will lend itself to advancement with seniority. Senior engineers are very much discriminated against. Companies want "young blood".

Engineering Ethics

The IEEE has a Code of Ethics. Article I states that engineers should accept responsibility for their actions. This says everything. You cannot get away with saying you were ordered to do this, or ordered to do that. You are responsible for what you do.

Another important article I find is Article IV. This article states that engineers, in order to fulfill their responsibility in a community, must protect the safety and welfare of the public.

Take a look at the Challenger disaster. The engineers, the specialists in the technology, were ignored. Engineers have the responsibility to speak out, but living up to that responsibility can sometimes cost them their job. The Society of the Social Implications of Technology awards engineers for their dedication to this principle. Three Area Rapid Transit engineers in the San Francisco area received the award in 1978. They separately warned their management that proper engineering practices were not being followed. The case became public and they were fired. A subsequent law suit was brought on by the engineers against the company. The case was settled out of court. But the engineers were unable to get jobs afterwards. The award was in some ways the only thanks they received from society.

These disasters are the result of modern technology mishandled. This mishandling can come in a number of forms including poor implementation, unforeseen side effects, and the problem of ill conceived end.

An example of poor implementation is the infamous DC 10 airlines. The door of the airplane opened while they were in the air. There were no safety measures and the pilot was not alerted. This had happened in test flights, but nothing was done about it. The company did not make it public because they didn't want to pay for the change. Engineering managers complained but nothing was done. Later a DC 10 crashed on takeoff and 54 passengers were killed. There was talk about how it would have been less expensive to pay the insurance companies of the 54 people killed, than to recall and make repairs on the DC 10.

An example of unforeseen side effects is the DDT acid rain. Once we saw the problem we did something about it. Another example is the privacy problem as a side effect of the extensive data banks in existence now. Some companies do make a tremendous effort to secure this data. A computer society has the responsibility to protect us from the computer "hacker". Be aware of the problems around you. There are many instances where you as engineers can change this world, and make it more livable.

The last is the problem of ill conceived ends. To avoid this you must do work that is in line with your personal moral principles. If you don't believe in drinking, don't get a job designing apparatus to make whiskey. If something conflicts with your ethical concepts, don't do it!!

The following are some ethical guidelines that I feel are important:

Do not deceive. You should not leave out significant information, and you should not falsify data. This happens over and over. Engineers exchange lies for money. Remember you are an engineer, not a business man, you have the responsibility for your own conscience.

Achieve and maintain professional competence. Engineering is a life long process of learning. Whether you take courses at college, your company, or IEEE, you must be up to date. It really doesn't matter why a bridge collapses, the fact is people were hurt, and if you were not competent. You must know the latest technology in designing that bridge so you can make it safe. You have the responsibility to get that competency or not to design that bridge. The question is whether or not you can get up in the morning and say "I've done my best."

I would like to conclude by sharing one of my beliefs with you. I think we are all brought into this world to do certain things. We are put into this world to attempt to move mankind a sixteenth of an inch forward. To attempt, because we never know whether we've succeeded, people who come after us will judge us. As engineers we have the tremendous responsibility to do this.

Here is a word from the sages: "If I weren't for myself, who is for me, and if I am only for myself, what am I?"

■■■■■

Continued from page 7

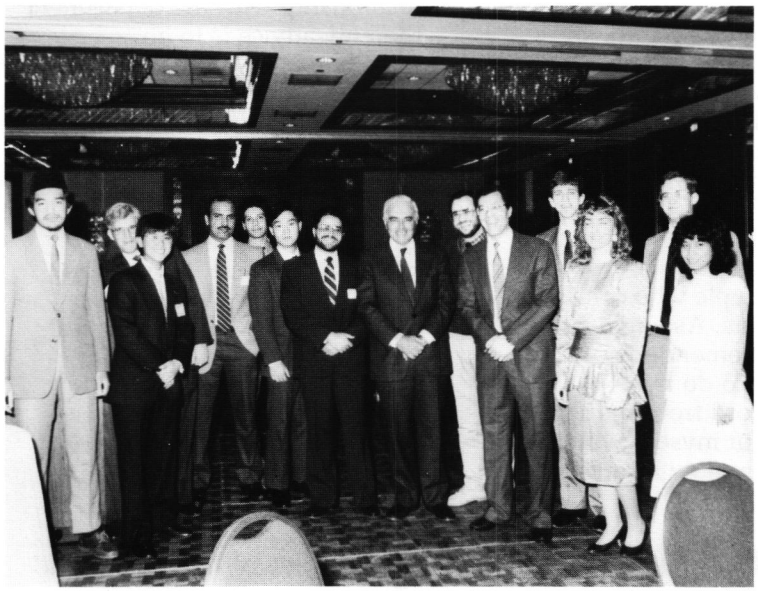
supervising engineers. A person with a BS in engineering followed by an MBA normally is not qualified to manage engineering operations without the advanced skills attained by the MS degree. Obviously, there are exceptions to this rule, especially when one might have a great deal of engineering experience before entering the MBA program, but in general, the MS in engineering is preferable.

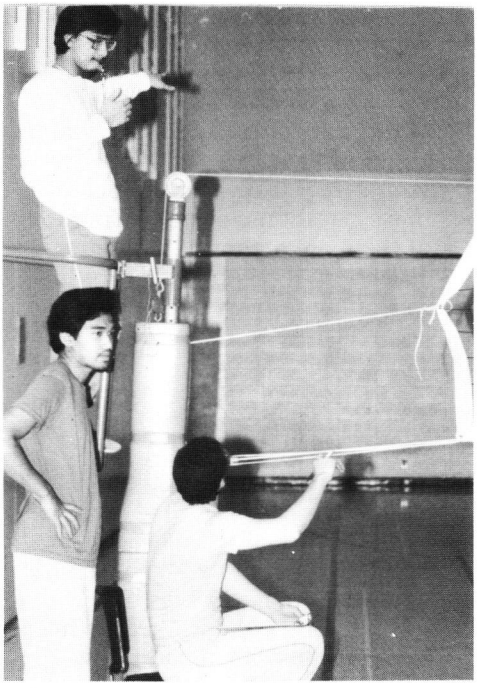
Q — What graduate school should I attend — Should I earn my degrees from three different schools or all from the same school?
A — If the school is cosmopolitan and the faculty members are from a number of different schools, then, yes, a student could earn all three degrees from the same school.

Q — What advantages are there to earning all degrees from the same school?
A — A student who is well respected as an undergraduate will probably be able to coordinate an entire graduate program related to previous undergraduate activities. Also, the faculty knows the student. The student may be able to save an academic term or more in the total time it takes to earn a degree. On the other hand, if the student is having problems at a school and has developed a negative relationship with the department then my advice is to go elsewhere.

To summarize, one additional point for graduate education is that all students, including freshmen and sophmores, should get involved with academic professional societies, such as IEEE, ASCE, and ASME (for electrical, civil, and mechanical engineering, respectively). It will help professional development and will increase the value of degrees. Engineers should be constantly educating themselves, formally and informally, taking advantage of all means for education. □

Great Fun and LAUGHTER...





Annual Engineers' Week 1988

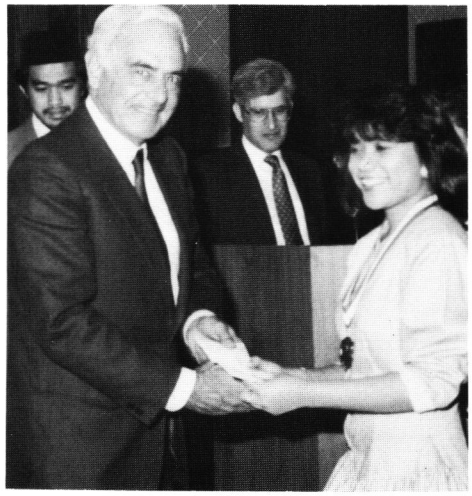
The Engineers' Council sponsored this year's Annual GWU Engineers' Week during the week of February 8, 1988 at various sites around or near the GWU campus. On Monday from two to five o'clock in the afternoon, members of the School of Engineering and Applied Science (SEAS) mingled at the SEAS Student/Faculty Reception held at the Marvin Center Continental Ballroom. On Tuesday from 6:00 p.m. until 11:30 p.m., the Volleyball Tournament at the Smith Center placed engineering students against one another in friendly competition. On Wednesday from noon until two o'clock in the afternoon at Tompkins Hall, the Popsicle Stick Bridge Contest tested the strength of bridges designed and built by SEAS students. On Thursday also from noon until two o'clock in the afternoon at Tompkins Hall, eggs were sacrificed under the guise of the Egg Drop Contest. On Friday from 7:30 p.m. until 1:00 a.m., the Engineers' Ball at the Washington Marriott Hotel became the finale to another successful Engineers' Week.

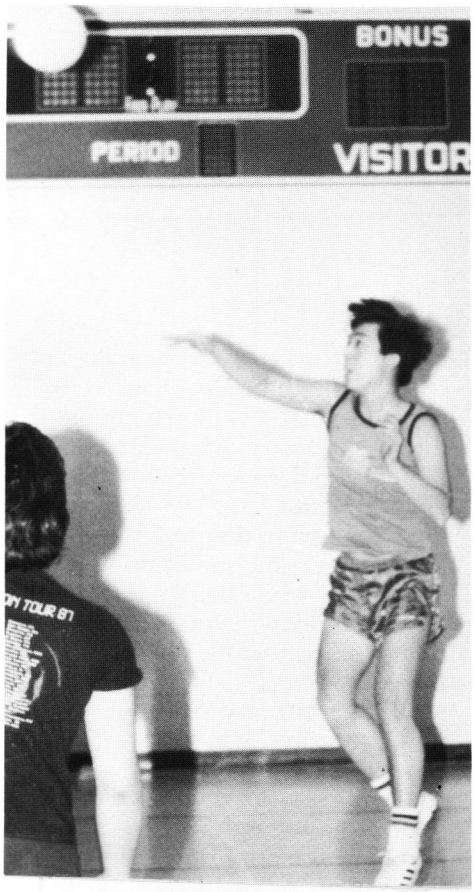
— *Ka P. Lee*

Photographs by EULER UY

and

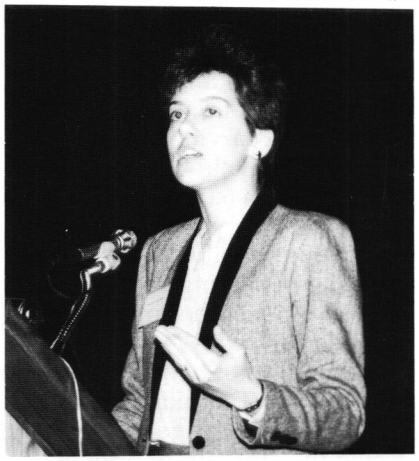
BUDIJANTO W. TJAHAJAD





Cecelia Jankowski: "Engineering as a Profession: Expectations and Reality"

Transcribed by:
Lilimar Z. Avelino


EULER UY

Cecelia Jankowski earned a BS in Electrical Engineering with Honors from the State University of New York at Stony Brook in 1981, and an MSEE from Polytechnic University in January 1985. She holds Engineer-in-Training certification in New York State. She has a patent and two patent pendings for signal processing hardware, and has written and presented a number of technical papers at national conferences of the IEEE, the American Institute of Aeronautics and Astronautics (AIAA), and the Society of Women Engineers(SWE).

Ms. Jankowski is a Team Leader in electrical CAE/CAD at Grumman Corporation, Aircraft Systems Division, Bethpage, New York. Since starting with Grumman in 1981, she has focused on the application and integration of CAE/CAD into aerospace and avionics/systems design and analysis, and the development of digital signal processing hardware for future weapons systems applications.

In IEEE, she is a member of the Student Professional Awareness Committee. In 1985, Cecelia received Honorable Mention as Outstanding Young Engineer from Eta Kappa Nu and the Grumman Engineering Award for Technical Excellence.

What I can offer you is first-hand perspective of what it is like to get out into the industry, to work coming out of school, to know what the environment's like, and how you progress within that order. You have been living on nothing for four years, while you go to school. Suddenly, you have all this money. Engineering is worth the education. It is worth the struggle. Your reward is not only the salary, but you are rewarded technically. It is challenging work if you place yourself in the right position. You have the opportunity to be innovative and in addition, you are working in a sophisticated technology. Everything in the commercial or military world revolves around engineering and new advances.

We might as well take this opportunity to gaze into the future through a crystal ball. What does the degree buy you? First, it buys you a job. You get your background knowledge. You know a little about theory. You have learned to solve your problems. You may want to continue in an advanced degree; however, it gets you in that door.

Typical questions you may want to ask in your career training classes are: What's your job responsibility? Where are you going to be assigned? When will you be given extra money? When will you be promoted to additional responsibility? Do you want to go on in your degree? Does your company pay for you to go on in your degree? What are your career tasks? If you look at these questions, basically, none of them are technical. With the exception of responsibility or job assignment, everything else there is career-related in a professional way.

Typical First Day

I look back at what exactly happened when I walked in. First of all, my manager was not around. Someone walked by my desk and told me a bad thing about this manager. By the end of the day, I was really petrified. By the end of the week, when this guy walked through the door, I was just ready to cringe or quit right there. Well, it turned out that he wasn't such a bad guy. However, there were many different managers. He was just one of them.

Then, the managers pulled out every technical paper that was written since they first started, and put it on my desk for me to read for about a week. When I finished skimming those, they gave me a manual. Everybody in that company knows there is this new person walking through that door, and you are it. They are evaluating you and they are making frequency notions even before you open your mouth - just based on your appearance.

When you finally meet this imaginary manager, what kind of job do you get? Lots of times it is not what you think. You think you are going to be given a tough mathematical problem to solve. Well in my part, I had a fellowship, and a particular project to work on. I thought I was going to be given the most important job of all. The first thing they said was they wanted me to count the number of chips in this box. I did not go four years to get this job of counting chips. It took a while to sink in that this job, although mundane, was really giving me extra information, such as reliability, what types of technology are used in the box and how does it affect what occurs in the box through the course of operation, how much it weighs, what type of material the chips are made of physically, how many boards were in it, the risk in the technology, can we actually get the chips built, and thermal characteristics. So, it makes you sit back and think about the quality of your job, rather than what the job actually is.

The big question is who should you go to for help? Obviously, you don't want to sit there and look dumb. Go up to the person who gave you that assignment and ask that individual to clarify certain points. It is the only way you are going to get a straight answer. Better yet, get it in writing, so that you meet the specificaions that that person gave you.

Working Conditions

You are on the job. You are not at school any more. What do you see? Well, you see different working conditions. Just because you are being paid a high salary, doesn't mean you get your own private office by the window. You may just get a little cubbie hole.

One of the biggest differences is the informal and formal technical meetings. Companies run by meetings. I find that most of my information is from meeting someone in the hallway and sitting down with them to have a discussion, and schedule a brief interaction to gain information about a project from each other. You should never be ashamed or afraid to take advantage of that, because in a company you are not competing for grades. You are competing as a company against other companies, or as one group to get ahead or trying to put forth an idea in the company. So, that is one way of politics. On the plus side, you probably get more current computers and the technology is more sophisticated.

Corporate Structure

Here is my version of corporate structure. There are very few engineers and mucho management personnel or all chiefs, and no indians. Who does all the work? You are responsible to many people in the organization. You have to be the communicators, because the manager has about thirty people under him. You may have to go to him and say, "Hey manager, this is the job I did." That is important. Make your presence known. The bottom line is they control your performance. They control your evaluation. They sign up on your raises. They are responsible for recommending you on promotions. It is up to you to make your presence known.

Who do you trust with all these personalities? Adopt a professional approach and try not to steer off course from it. Make sure you don't say anything that is going to come back to haunt you. Think before you act. Probably, the most important thing I can tell you is to avoid total dependence on anyone. It is very convenient to get a mentor. That person is there as an advisor. He is not there to get you through. If you haven't been keeping up your half of the bargain, chances are there is going to be no help for you. You have to be the one to rely on your own resources.

Technical Prejudices

This basically boils down to this new technology issue. Those of us who come right out of school are more likely to approach new technology with an open mind. People who get used to one particular job get used to using the same technology. Since you are a new person coming on board, suggest new technology and if necessary, be able to justify it.

Look at the word obselescence. Believe it or not some of you could conceivably be obsolete the first year after you graduate. It has nothing to do with age. It has to do with how open you are to new ideas and new ways of doing things. If some people do not want to approach something new, they are in effect obsolete. They are not with the real world.

Also, don't be a buzz-word person. Don't be somebody who just uses buzz words, and cannot explain technology. The understanding of it is much more important than just knowing the buzz words.

Classic Discrimination

I fall into two categories of classic discrimination. First, I am young. Second, I am a woman. Some may argue that there is old age discrimination, being pushed out of a job. The biggest thing to work against me is my age. What I am trying to interject into my work may be somewhat radical. Most young people are familiar with computers now, more so than before. That is one key to advancing yourself. Technical abilities proportional to longevity is a misconception. The only way to do it is to prove yourself by showing more technical ability, solving problems given to you or more importantly, find a problem and then find a solution to it. Remember, build your own credibility, rely on your own resources, and build up your own abilities.

Professionalism

A young professional is somewhat of an unknown quantity in most companies. How many young people represent organizations at technical meetings? Well, there is getting to be more. There are many times where the young ones do all the work and their managers do the presentations. Be the one to ask your manager to give a presentation. You'd be surprised how receptive they are. They feel that most people don't want to do a talk. Speaking is not too bad. Right not I am increasing my professionalism, because you are a different audience and your interests are in different things. I have a different set of peers that I am being reviewed by. Each time I stand up, I am increasing my professionalism.

Participation in professional societies is a way to get involved, because there is very little penalty. When you make a mistake at running something in IEEE, it increases your learning, but when you make a mistake in your job, you are penalized for it either in salary, raises, or promotion. In dealing with outside corporations or customers, you as an electrical engineer working with many of these design companies, have to interface with suppliers, applications engineers, and technical people. That's the way to build your professionalism. Being able to hold your own ground with the unknown is probably the strongest training you can get. Be able to answer questions. Communication is critical.

Business Week has a chart which goes through the percentage of time spent in the engineer day. Writing and discussing, plus written and oral communication takes up 60% of your day. Designing takes up 15%. Designing is what you come to school for. The communication or 60% is what you have to add to your career, because a lot of schools do not require writing or speech classes. The bottom line is if you make one typographical error in your documentation, it may cost $1000.00 to change it. For example, if you typed 5 volts instead of 15 volts, you are incurring additional costs to change the documentation. So, you want to be right the first time. Know what you are doing.

Politics

All this politicing is going on. I am going to present my project. Little did I know that this guy who is personal friends with the vice-president had also been going to prepare his private conceptions. He played golf with the vice-president. Well, guess who didn't get the job? You have to be aware of your surroundings. Be aware of the fact that people will tend to agree with those people they know and trust. Be one of those people who are known and trusted within the organization. Don't be somebody who is all talk and no backing. Individuals are out to get ahead even if it means using you to do it. Generally, you find that out after the high-level activities come about.

Looking at lay-offs in the company. They are not laying you off, because you may not be doing your job. They are laying you off, because their profit is not as high as it should be. They are all looking to improve that. You have absolutely no control over that. You have to keep a steady technical record, so that when that time comes, the next job you go to you are not penalized.

●●●

The management in the company is tending to get better for what you are doing. They are looking for young people to give presentations, and give technical technical talks. For example, my company is more than happy to get me involved in the S-PACs, because they know that it is a benefit to me. So, it benefits them.

On the Job

What it basically boils down to is timing. You want to be in the right place at the right time. What are the strengths? The biggest one is you are open-minded. Second, you have to be inquisitive. Don't be afraid to ask questions. You have nothing to lose by learning information. Finally, be motivated. You have what it takes to get ahead if it is channelled in the right direction.

The largest thing to adjust to is personality extremes. Either you come in and you are so quiet and you don't want to talk (the I've got a secret syndrome), or everybody around me knows how bright I am and I know how to solve a problem. The biggest problem is that it hides the true personality. You find out that the shy people really do know what they are talking about, but they don't know how to put it into words or are afraid to say it. The know-it-all figures that he is going to say everything, figuring that will cover him and people will be intimidated to ask questions.

Again, you have to be the one to tell your manager what you are feeling. If you are unhappy with the job and your performance slacks off, it is still your professional responsibility to get the job done. The best way to do it is not to slack off and get kicked off the job. Get the job done, and in the mean time, look for a place to go. Don't just give it up and slack off, because you will essentially lose your credibility.

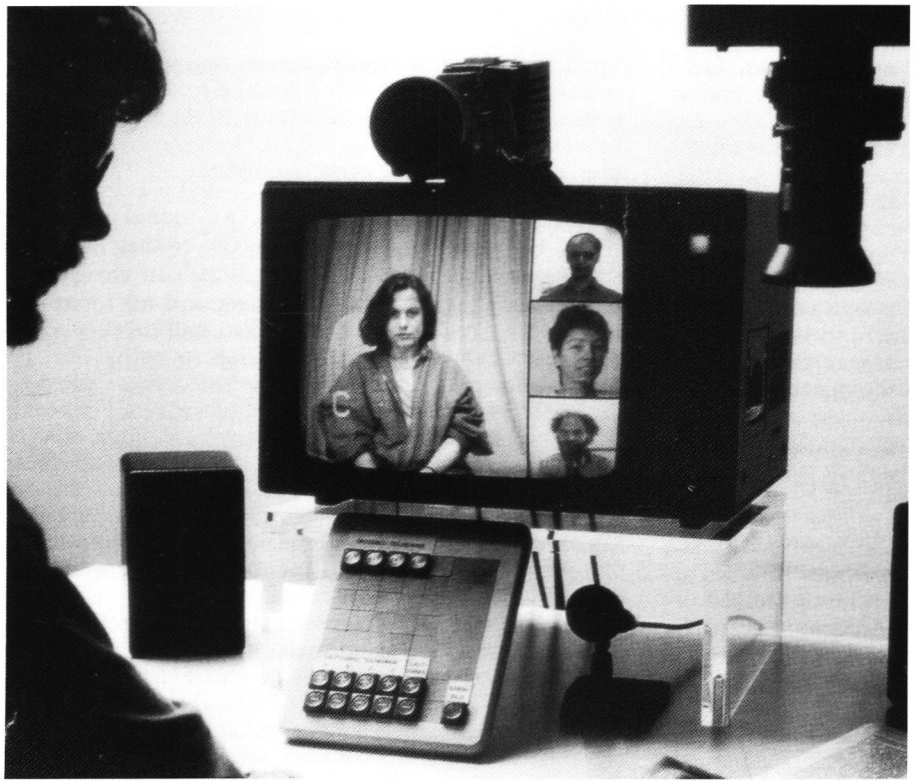
I would suggest that anybody take any opportunity to get up in

front of a group of people - whether it be talking at S-PACs. Talk within the company itself. If it comes to teh point that your work may help others, give a short presenttion. The manager will be more than happy to let you put together a half-hour presentation. Volunteer. Know the corporate goals. Establish a relationship between yourself and those who are decision-makers within your company. Finally, set goals for yourself. Make sure the goals are reasonable. Make sure that you are aiming for a goal that you can attain.

Furthermore, stay on top of the new technology. Once you get into engineering, there are more than 100 magazines that you can get that are very thought-provoking. Get those subscriptions from co-workers. Start increasing your responsibility. Assign yourself something to do. Show your manager that you are intereseted in increasing your responsibility. Don't close any doors. The minute somebody asks you something, don't turn them off, but leave the door open so that it you need the contact someday in the near future, you can rely on that contact.

Remember that no career is worth risking your health over. You chose engineering because you liked it. There are benefits - whether it be financially or challenging. Make sure that you keep your sense of humor. That is important, because how you say something is more important than what you actually say.

TECH BRIEFS



A desktop teleconference that allows the participants to converse as they view graphics picked up by a camera.

LIVING IN THE AGE OF INFORMATION

Communication is one of the most rapidly changing technologies. Research, development, and current usage of new technologies in the arena of telecommunications, such as intelligent broadband fiber networks, is now feasible and offers many possibilities that were once only dreamed. The bandwidth of fiber will allow broadband communications for the first time. AT&T, Northern Telecom Inc., and many of the Bell operating companies plan Fiber-to-the-Home experiments this year. These tests will cover everything from straight telephone services to interactive video response, videotelephony, medical images set to aid long distance diagnosis, and the emerging digital high-definition television (HDTV). Today's International telephone network is already evolving toward a public broad communications system, unifying telephone, video, and data communications. One should see the initial architecture of the broadband integrated services digital network(BISDN) in place within the next ten to fifteen years.

Universal Communications

Intelligent broadband, lightwave networks, will utilize the latest technological developments in architectures and electronic components. The momentum is focused toward the concept of universal communications:

- Communications among people anywhere, anytime, in any medium or combination thereof.
- Retrieval and sharing of information from many sources and many forms of multiple media among people in shared electronic environments.

●Distribution and availability will be accessible in a wide variety of cultural, entertainment, and educational media forms for use in homes or offices practically on demand.

This capability can not be provided soon at the price people would be willing to pay for it. Universal Communications is boosted by technology and the market place. Technical developments deriving toward universal communications include lightwave transmission through fiber-optic cables, high speed switching, and new software to make operation of an integrated-services network both feasible and economical. The market's pull comes from automated offices and factories and the rapid growth of consumer electronics. Existing communications facilities will have to expand and convert to integrated services networks to be able to continue to provide a wide range of media services.

The Solution: Broadband

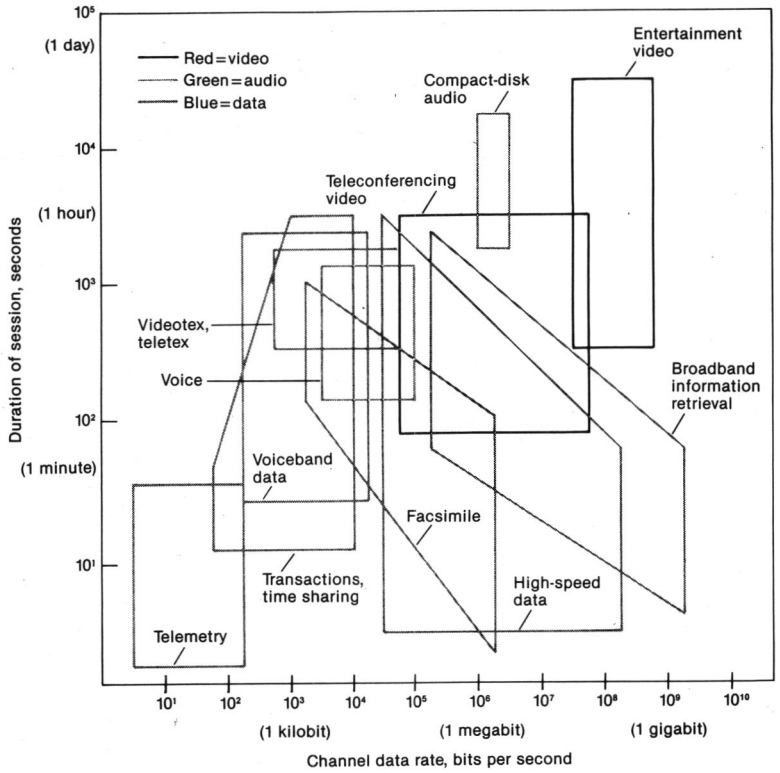
Any kind of communications traffic, such as voice, data, graphics, or video can be represented as streams of ones and zeros. Thus, the channel capacity required can vary from a few bits per second for telemetry to as many as a billion bits per second for high-definition television (HDTV). The wide range of holding lines and channel capacity presents difficulties in integrating different kinds of traffic. Digital is chosen versus analog, since transmission, switching and subscriber access through digital circuits yield better transmission quality, easier integration of multiple media and cheaper operation. Another major step in digitization world wide is the integrated services digital network (ISDN). George Washington University has recently started operation of its AT&T installed ISDN, linking the communications between George Washington's Hospital, medical school and the University. But, ISDN cannot carry high-quality video services while BISDN can. The implementation of BISDN would break the voice orientation that has characterized the telephone network since its beginnings over a hundred years ago. Light-wave transmission technology has catapulted the transformation using extremely high-speed switches, at first electronic, and later, possibly photonic switches will be used.

The possibilities of BISDN include:

●A new era of broadcast entertainment, one that emphasizes personal choice. Imagine selecting any movie from a catalog at any time.
●Deferred delivery of individually chosen video material, such as a college lecture. These could be downloaded to your video-cassette recorder.
●Other possibilities are personalized broadcasts of sports, entertainment and professional programs. An engineer could pick one of several ongoing sessions at a bio-medical engineering conference. One could check in on the other engineering conference sessions from time to time through an inset window.

Communications networks must meet the needs raised by advancing home and office communications, information, and entertainment systems. Intelligent broadband networks will be able to provide these services that were once a dream some years ago. The only deterrents right now are the technical, regulatory, and economic questions that need to be resolved.

— Kevin K. Green



Different kinds of video traffic make different transmission-rate and holding-time demands on a network.

AWARD-WINNING ESSAY FOR WRITING CONTEST

David Owczarek won first prize for his essay entry in the MECHELECIV writing contest.

by David Owczarek

David needs one more year to complete his B.S.E.E. here at the George Washington University. He works for the SEAS Computing Facilities' Decision Support System Laboratory. Outside of SEAS, he is a very active member in the Sigma Chi Fraternity, and enjoys playing the guitar in his spare time.

In my four years here at the George Washington University, I feel that I have gained enough insight to objectively assess the quality of my education, and in spite of a few bad experiences, I give the school good marks. When I arrived here, the school already had a competent and respected engineering school, and I see a great potential for continued improvement. Indeed, the last few years coupled with the next few will be exciting ones, for I feel they will determine the direction that the School of Engineering and Applied Science will take towards the "Harvardization" of its programs. Several important steps have already been taken in this direction, but more needs to be done.

Two of the most important changes in the curriculum are, rather surprisingly, not directly related to engineering. The first of these is the restructuring of the humanities and social sciences requirements which has taken place gradually over the last few years. The new requirements help to insure that students take a wide range of classes outside of the engineering curriculum. The benefits of this program are numerous, but most important is that students will be able to put their technical knowledge into perspective and perhaps help to close the dichotomy that exists between students of the hard sciences and those of other disciplines. The second important change is the gradual acceptance of English 110, "Writing in Engineering and the Sciences", as a requirement for the School of Engineering and Applied Science. Although not every major has made this change; it seems inevitable that they will in the next year or two. The importance of this class is obvious. Good writing skills are essential in any professional position, and the ability to effectively communicate through writing increases job marketability, performance, and mobility.

There are many other positive aspects of GW's engineering program. For example, the use of laboratory classes gives students a chance to see the theories they have learned demonstrated firsthand, as well as providing experience with standard laboratory test equipment. The acquisition of state-of-the-art equipment for these labs provides students with exposure to realistic working environments. And the recent accreditation of the computer engineering degree further illustrates that the engineering program here is flourishing.

Amidst these successes, however, one must ask why GW is not one of the top-rated engineering schools and what can be done to further improve the School of Engineering and Applied Science. There are many criteria to consider when evaluating schools, such as faculty, facilities, curriculum, etc. Though many of these criteria can be improved only gradually, I would suggest four main items as a starting point. The first would be a continued commitment towards the acquisition of the best equipment and faculty possible.

How well do you know your Greek alphabet? Try decoding this message!

ηαϖε α γρεατ συμμερ ϖαχατιον!

σεε ψου νεξτ ψεαρ!

Through gradual upgrades, the school can obtain the resources to compete with the top-rated engineering schools. The second item would be more exposure to the working environment for students. I would propose a required class or perhaps a seminar that teaches aspects of the job environment such as the in-relations of the different fields of study, industry language, and business considerations. This class would help students to understand the full scope of their work and its relation to other engineering disciplines. The third item that needs improvement is the cooperative education program. It should be expanded and restructured so as to become an integral part of the engineering school. The Washington area is one of the top high-tech centers in the country, and our students should be able to take full advantage of the opportunities that abound here. The last item needing attention is the academic advising system. The academic advisor should be a fundamental part of any student's college experience, and the current system should be reorganized to provide that. One essential part of the system should be frequent contact between the students and their advisors, so that advisors can monitor progress and help students with tough decisions, such as picking a concentration and career strategies.

In spite of the need for improvement in these areas, the engineering school has a good program. We have the framework and many components of a top engineering school. There is great promise ahead. With our new president and the program for the year 2000, I feel the university is making a commitment to providing the best education possible, and the next few years should establish a trend which will eventually put the George Washington University School of Engineering and Applied Science among the best schools in the country.

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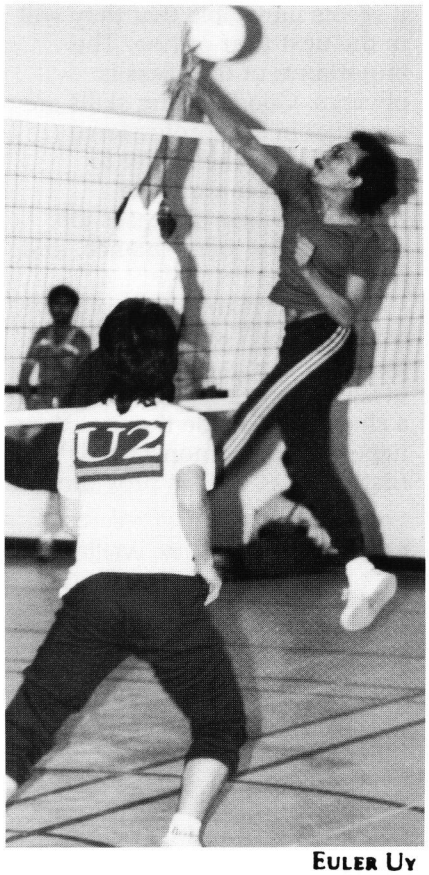
Engineers' Week Volleyball Tournament

A volleyball tournament was a featured event during Engineers' Week. The success of the seven team competition was due to the participation of both international teams and unusually high involvement from freshman engineering students.

The games were held at the Smith Center auxiliary gymnasium on February 9 from 6:00 p.m. to 11:30 p.m. The international teams consisted of two United Arab Emirates (UAE) teams—UAE 1 and UAE 2, the Malaysian Students' Association's MSA 1 and MSA 2, and an Egyptian/SEAS Faculty team. Moreover, as shown by the abundance of school spirit and participation, the usual freshman apathy had been overcome. The freshmen's enthusiasm was evident through the participation of the freshman teams of the PV NERTS and the Bombay Bombers.



EULER UY

The Malaysian Students' Association 1's road to victory included wins over UAE 2, PV NERTS, and ultimately UAE 1. Each member of MSA 1 received a well deserved medal at a ceremony during the Engineers' Ball.

The major factor contributing to the success of the Engineers' Week Volleyball Tournament was participation. Students of all nationalities and classes sacrificed time from their studies for a night and demonstrated the school spirit and togetherness that such an event could bring to the GWU engineering community.

— Nelson M. Kee

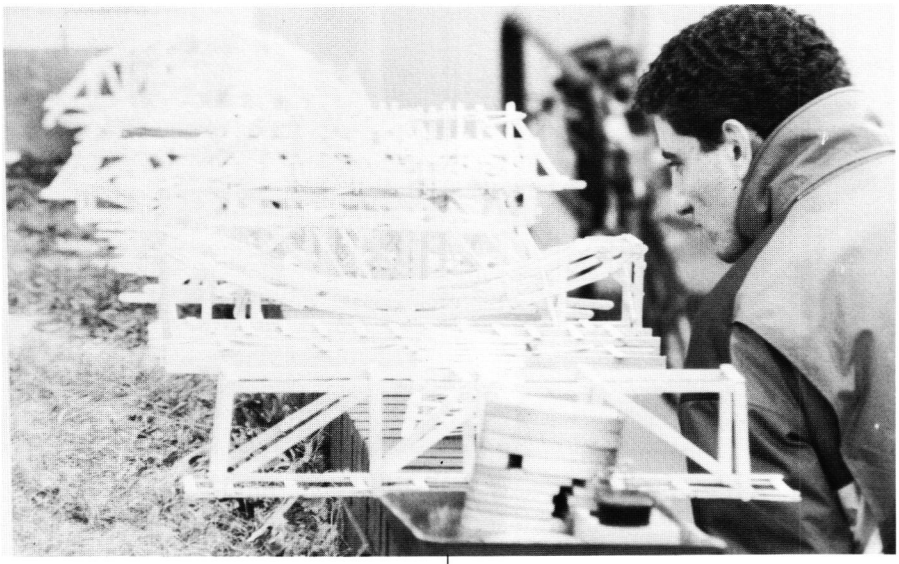
The 1988 Popsicle Stick Bridge Contest

The Popsicle Stick Bridge Contest held on February 10, 1988 was one of the traditional events for the GWU Engineers' Week. The contest demanded patience, craftsmanship, and some technical knowledge on structures in order to have a good design.

There were twenty-five official entries and five late entries contested. As compared to the six entries from the previous year, this year had a significant increase in terms of the number of participants.

The contest started at twelve noon and lasted nearly two hours. In addition to the participating bridge designers, the competition attracted about twenty spectators.

The winning bridge supported three hundred pounds of weight. Such a heavy load amazed everyone who were present for the contest. The



EULER UY

designers and builders of this winning bridge were Rosliza Roslee and Yarlida Yahya. The second strongest bridge supported two hundred and fifty pounds and was built by Danial Mdnoor, who was not a mechanical, but an electrical engineering student. Third place went to the team of Husney Abu Hassan and Saffaruan Mahamad. The prizes were $100 for first place, $60 for second, and $40 for third. There were altogether five bridges that supported over a hundred pounds of weight before they collapsed.

Most of the bridges met the design specifications set forth by the Engineers' Council. Some of the bridges were disqualified by the judges due to failure to comply with the specifications. The judges were Professor Raymond Fox, Professor Theodore Toridis, and Professor Shahram Sarkani. Greg Friend, a student whose bridge was disqualified, wrote an official complaint charging that the design specifications were ambiguous. (Sources said that Friend's complaint was being reviewed by one of the judges. - Ed.)

There was also a controversial testing procedure. Bridges that were tested prior to contest were subjected to loading and unloading cycles, which was the process of removing a few smaller weight units and replacing them with a larger equivalent weight block. This process caused the bridge to suffer fatigue loading. However, many bridges which were tested at the time of the contest did not suffer fatigue loading since at that time the judges had decided on a minimum load that by-passed the use of smaller weight units.

In general, the Popsicle Stick Bridge Contest ran smoothly. More importantly, everyone had fun.

— Poh Chuan Chua

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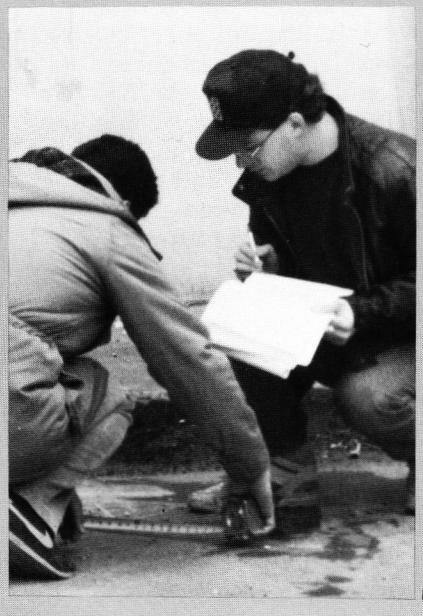
The Annual Egg Drop Contest

Thump! Thump! Thump! Such were the sounds of eggs crashing into the concrete parking lot of Tompkins Hall on February 11, 1988. Some unfortunate eggs cracked within their various containers. (coffins? - Ed.) Yet some survived if only to be beaten and eaten on another day. Where was the sanity in jeopardizing the edibleness of America's favorite breakfast food? The reason was the annual Engineers' Week Egg Drop Contest where students package defenseless eggs and drop them off the roof of Tompkins Hall onto a bull's eye target painted on the ground.

The popularity of the Egg Drop Contest was evident in thirty-nine entries and a few dozen spectators. The object was not only for the egg to survive the ordeal of impact, but to do so in style. Style was based on the time elapsed as the egg fell off of the roof and landed on the ground, and on the proximity of the egg to the middle of the bull's eye. The $100 first place prize was awarded to Yeop Azrin Mohamad. The $60 second place went to Fauziah "Uji" Abdul Wahid who served as the American Society of Civil Engineers (ASCE) Representative on the Engineers' Council. Andrea Chop received the $40 third place.

— Ka P. Lee



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ENGINEERS' BALL - A Perfect Ending to a Memorable Week

The wind chill factor felt like a death threatening thirty degrees below zero Fahrenheit. The gusts of snow flurries and freezing rain made the short evening stroll from the GWU campus to the Washington Marriott Hotel a bone chilling nightmare. Nevertheless, neither wind, nor snow, nor rain could dissuade the many who were determined to enjoy an evening of dining and dancing.

So slowly but surely, dressed in formal attire, GWU students, faculty, staff, and their guests began to arrive at the Marriott. As the participants waited in line to present their tickets for the Ball, they were also in anticipation of sharing exchanges with good company, of dining on delicious cuisine, and of dancing to the musical beat of a live band. Their patience was not in vain. For they were at once received by the beautiful Marriott Ballroom that was exquisitely decorated with meticulously-placed table settings and romantic, dimly lit grand chandeliers.

The formal proceedings began at eight o'clock with opening remarks from Ka Lee and Hassan Ibrahim, the secretary and president of the Engineers' Council, respectively. Next Dr. Harold Liebowitz, Dean of the School of Engineering and Applied Science (SEAS) and the evening's honored guest, delivered a brief speech reflecting on his experiences during his twenty year tenure as dean of SEAS and forecasting his vision of the next twenty years for SEAS. Amongst Dean Liebowitz's hopes for the future was the establishment of GWU alumni chapters throughout the world.

Following the speech the participants enjoyed their choice of delicious chicken, seafood

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newburg, or vegetable lasagna entres. Salads, rolls, and various vegetable side dishes complimented each entre. Dessert was ice cream topped with fruit filling and a slice of peach. It should be noted that the Engineers' Council made a determined effort to serve tastier food this year and to accommodate the different tastes of the participants.

Immediately before the serving of dessert, medals and cash prizes paid for by the Engineers' Council were awarded by Dean Liebowitz to the winners of the events held earlier during Engineers' Week. These events were the annual Popsicle Stick Bridge Contest, the Egg Drop Contest, and the Volleyball Tournament. The presentation of awards was not only thrilling for the recipients, but the volume of cheers and applause during the presentation demonstrated the school spirit among the members of SEAS. Finally calculator door prizes were also given to three lucky students whose names were drawn by chance.

After dessert, the vibrant melodies of "Chain Reaction" beckoned people onto the dance floor. The swaying rhythm of their brass section kept the crowd on the dance floor until one o'clock. After the Ball had ended, everyone left the warmth of the Marriott, ventured out into the chill of the night.

The entire evening was quite a success for not only the many who attended, but for the Engineers' Council whose hard work and effort made this year's Engineers' Ball a true triumph and a perfect ending for a memorable week!

— Swati Patel

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New Career Services Assistant Director

The GWU Career Services Center (CSC) has appointed Lucy M. Hoffman as Assistant Director of CSC effective March 1, 1988. Among Hoffman's responsibilities are to serve as liaison to GWU's School of Engineering and Applied Science and the School of International Affairs.

Most recently, Hoffman was coordinator of career services at Mount Vernon College and is currently an instructor of career development at the University of Maryland, University College. Hoffman has a Master of Education in College Counseling/Student Personnel Administration and a Bachelor of Science/Bachelor of Education from the University of Delaware. Hoffman may be reached at CSC using 994-6495 on weekdays.

— GWU Career Services Center

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

The George Washington University student chapter of the National Society of Professional Engineers (NSPE) was established at GWU and chartered by NSPE during the fall semester 1987. There are other professional engineering organizations on campus, the IEEE (Electrical Engineering), American Society of Mechanical Engineers, and the American Society of Civil Engineers. These were all formed to promote the professionalism, and advancement in technology in their specific engineering disciplines. NSPE on the other hand, is more directed to work with the concerns and needs of all the engineering disciplines.

The NSPE puts out many valuable services. It publishes an annual salary survey, to help engineers gauge their wages, and several publications to help engineers through the difficulties of private practice. NSPE provides the professional recognition that often gives an engineer a competitive edge. It allows younger engineers networking to peers, and also provides the opportunities to meet and discuss engineering with leaders in all engineering disciplines.

NSPE has several divisions to provide assistance to problems in specific fields: The Professional Engineers in Construction division, The Professional Engineers in Education, Professional Engineers in Government, Professional Engineers in Industry, and Professional Engineers in Private practice. NSPE also helps to set standards in ABET accreditation reviews, governmental regulations, job description and classification standards.

The EIT and PE Exams

The most important function of the NSPE is providing the Professional Engineering Certification. The EIT (Engineers in Training) exam is a preparation for the Professional Engineering Exam. The EIT exam is usually taken just after graduation, and covers all the basic areas of engineering. Review classes are almost mandatory for a passing score. The Professional Engineer Exam is taken no sooner than four years after completion of the EIT. The PE is in depth coverage of your specific field (EE,CE,ME..)

Why Take the EIT or PE?

An engineering student might ask what exactly will passing this exam do for me if I'm not planning to start my own firm and therefore be liable for the public welfare.

Okay, you can probably get a job without taking the EIT or PE, and it does require a lot of time and effort. But weigh the advantages that a PE by your name would bring you, such as a competitive edge in the job market. A little time and effort is worth proving you got something out of 4 years of struggling through the Engineering program.

But most importantly, by taking the EIT and later the PE, you prove your commitment to engineering, the advancement of science, and your dedication to professionalism.

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GWU Chapter involvement in PE Exams

The initial focus of the GWU chapter of NSPE is to increase awareness of the EIT, and PE exams to the GW students. Engineering licensing is not required, unlike law and medicine, and thus remains unnoticed to many young engineers. The importance of such exams are unfortunately often overlooked.

Several review classes are offered around the city at varying costs. It is the hope of the GWU NSPE chapter that there will be enough members to offer a review class free of cost to engineering students. The number of students taking the exam has historically been small, making the formation of review classes difficult. If enough students participate in review sessions, these sessions can often be taught by faculty members covering their area of expertise. Alternatives to this is to have members of a review group contribute to hire someone with experience conducting EIT review classes for another organization. The GWU NSPE chapter President is strongly committed to increasing the number of students taking the EIT exam, and providing any possible resources to anyone wishing to take it.

Rich Biby

If you are interested in further information, please contact:
Richard Biby
NSPE Chapter President

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